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KHAPRA BEETLE—FOREIGN MENACE



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U.S. DEPARTMENT OF AGRICULTURE

A bulwark against all invading insect pests, agricultural inspection includes shielding the millions of tons of grain, seed, and other food reserves in this country from the most destructive and elusive enemy of stored products—the khapra beetle. A hand lens helps the inspector shown above find live khapra beetles and larvae in insulation from a ship's hold. *N-58205*

U.S. DEPARTMENT OF AGRICULTURE
Agricultural Research Service

Picture Story No. 196
June 1966

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The khapra beetle's tiny size makes inspection a meticulous chore. The beetles are a tenth to a fifth of an inch long; the larvae, about a fourth of an inch. What they lack in size they make up for in their voracious appetites and their ability to reproduce in large numbers in undisturbed grain. BN-26556



Good light and sharp eyes are needed to detect khapra beetles in a ship's hold. Residues in cracks and crevices indicate to the inspector that the ship carried grain or other host products at some time in the past. Examination of debris can reveal whether a ship is infested and how heavily. BN-24408

CATCHING THE KHAPRA

The destructive khapra beetle threatens to enter our country as a stowaway hiding on incoming ships, planes, cargo, mail, and baggage. Only thorough inspection at ports of entry and fumigation of all infestations can protect our food resources and prevent another multimillion-dollar khapra beetle invasion, such as occurred in the Southwest more than a decade ago.

Because khapra beetles are unable to fly, they are spread chiefly through shipping and trade. Although minor infestations were reported outside the insect's native India before World War II, the beetle did not become a menace to the U.S. until the post-war change in trade patterns caused a major dispersal of the pest.

As the beetle spread, numerous, infested cargoes from Asia, Africa, and Europe began arriving at our shores, and the number of interceptions of khapra beetles made by agricultural inspectors increased rapidly. In fact, interceptions have multiplied $3\frac{1}{2}$ times during the last six years, climbing from 131 in 1960 to 462 in 1965.

During the 12 months prior to June 30, 1965, 105 ships at U.S. ports were fumigated—almost twice the number fumigated during the previous year. The 1965 shipping season saw six ships fumigated at ports on the Great Lakes, close to our major grain-producing and storage areas. Once established in this country, the beetle could cause incalculable damage, and eradication costs would run into millions.

The United States has learned from experience the high cost of eradicating this pest. An infestation discovered in the Southwest in 1953 was isolated in California, Arizona, Texas, and New Mexico, away from the major grain-producing areas. Eradication costs there have totaled \$11 million to date. All known infestations in this country have been treated.

Khapra beetle larvae feed on all types of stored grains. Larvae have even infested cereals, beans, noodles, crackers, and nut meats.



A ship's storeroom must be carefully inspected. Khapra beetles can infest the commodities used to feed the crew and may lurk in the folds and seams of sacks containing supplies. If not eliminated, such infestations could be carried ashore with empty food containers or foodstuffs. Khapra beetle larvae shed their skins several times during the life cycle. Inspectors look for these cast skins as one sign of an infestation. BN-24566



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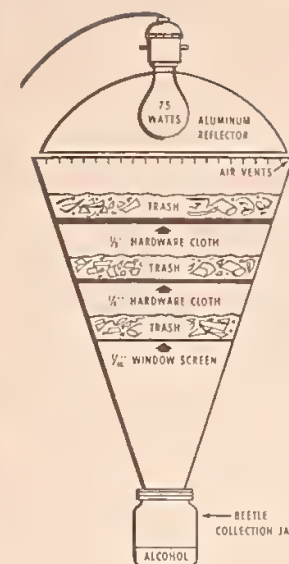
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This tool helps inspectors detect the khapra beetle by utilizing the insect's tendency to shy away from light. Samples suspected of containing the insects are spread over three screens inside a modified Berlese funnel. The screens, varying in mesh size from $\frac{1}{2}$ -inch down to $\frac{1}{16}$ -inch, insure proper separation of the material. A light bulb placed at the top then drives the insects down through the sample and screens, and they drop into a collecting jar at the bottom. BN-27007

(Below) Cast skins of the khapra beetle shown on the knife were found in a mixture of burlap bagging and corn waste. Such bagging with grain residue offers food and camouflage for the burlap-colored beetle. A common source of khapra beetle infestations, burlap bagging is used in great quantities as backing material for car floor mats, rug pads, upholstery material, and other items. Unless infested bagging is fumigated, manufacturers could unknowingly store it in warehouses for long periods with resulting contamination of other stored materials, including food products. N-58206



Larvae ate holes in this suit and other articles of clothing packed in a trunk shipped from Greece to Cleveland. The insects were apparently introduced through a box of almonds in the trunk. Khapra beetles normally do not eat clothing, but when the almonds ran out, the larvae moved into the clothing to find something to eat. BN-26805

If left undisturbed, they multiply rapidly and can destroy entire warehouses of grain.

The khapra beetle is extremely resistant to normal dosages of fumigants. It has few natural enemies and is tiny enough to hide in cracks, crevices, and behind paint scales. It prefers the surface of bulk-stored grain, but can burrow down as deep as 12 feet.

The insect is often found in the ears and seams of used burlap bags or wrappers as well as in materials which provide it food. It can survive for years without food, and is sometimes discovered far from a food supply.

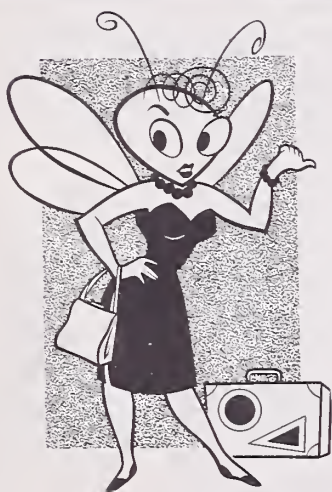
Khapra beetles have been found with shipments of canned tuna, oil paintings, various gums and spices, imported cars, steel, lumber, and crude rubber. The beetles even travel by air and have been found in bedding for race horses and in feed accompanying shipments of monkeys.

Such infestations usually result from storage of the product in infested warehouses, transportation in infested carriers, or mingling of clean and infested cargoes aboard ship.

In addition, the insect is increasingly found in passenger baggage and in mail. A little boy returning to the United States by plane carried two hamsters and some hamster feed in his baggage. The feed, bought in England, was infested with khapra beetles. Infested pistachio nuts and almonds have also been discovered in baggage. Infested peanuts were found in mail in New York.

Our strongest defense against the khapra beetle is to prevent another infestation. The U.S. Department of Agriculture informs importers, shipping lines and foreign shippers of current methods to eliminate this pest. The Department also promotes research for better control and inspection techniques, and provides special training in khapra beetle detection to agricultural inspectors who constantly guard our country against another invasion.

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Baled wool stored in a ship's hold with khapra beetle-infested rice became contaminated and is shown here being prepared for fumigation by a commercial operator. Untreated infestations allow the beetle to spread to other cargoes and increase the danger of its being established in the United States. The khapra beetle cannot be eradicated by using conventional insecticide sprays or the customary dosages of grain treatment fumigants. Methyl bromide and hydrogen cyanide gas are effective when used at concentrations higher than those necessary to kill other grain pests. Such fumigations often cost commercial interests thousands of dollars. BN-26801

"Pestina," the hitchhiking bug, is a symbol used by the Plant Quarantine Division of the U.S. Department of Agriculture on publications, posters, and television. It reminds travelers that innocent-looking fruits, plants, and souvenirs can carry plant pests into the United States. Prospective travelers should obtain advance information and permits from the U.S. Department of Agriculture before bringing plant materials from foreign countries. They should declare all such materials to inspectors at ports of entry when they return to the United States. BN-20484

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